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5,293,137 to Tavis et al. Claims 33 and 37-49 were further rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,854,557 to Tiefnig.

With this Amendment, claims 33 and 37-49 have been amended. In particular, claim 33 has been amended to recite "A method for measuring a magnetic characteristic of ferromagnetic or ferrimagnetic microparticles, said microparticles being provided in a polymeric or pre-polymeric composition." Support for this language can be found in the specification on page 2, lines 9-14, page 20, lines 14 and 25-27 and page 22, lines 5-13. Claim 33 has been further amended to recite "determining the magnetic characteristic of the microparticles using the corrected measurement." Support for this language can be found in the specification on page 17, line 20 through page 18, line 31 and page 21, lines 16-22. Similar amendments were made to independent claim 43. Claims 37 and 44 were amended to recite "the inductance of the coil being directly related to magnetic permeability of the microparticles, and the magnetic permeability of the microparticles comprising a magnetic characteristic of the microparticles." Support for this language can be found on page 17, lines 17-25, page 20, lines 14 and 25-27 and page 21, lines 16-22. No new matter is involved.

As noted above, claims 33 and 37-49 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,334,932 to Nielsen in view of U.S. Patent No. 5,293,137 to Tavis et al. The '932 patent teaches providing a sensor arrangement for measuring the quantity of ferrous particles suspended in a fluid such as lubricating oil in a transmission. The sensor arrangement comprises a series resonant circuit including a coil 62. An oscillating detector is coupled to the series resonant circuit and comprises an operational amplifier 2, a rectifier 3, an integrating comparator 4, and a multiplier 6. A rectified signal from the oscillating detector is provided to a period measurement line of a microprocessor. A microprocessor program counts the number of pulses arriving at the measurement line per period of time and calculates a period of oscillation of the resonant circuit, see column 6, lines 27-30. As debris particles accumulate on a collection surface 60 adjacent to the coil 62, the inductance of the coil changes, thereby changing the period of oscillation of the oscillating detector.

The '932 patent discusses temperature compensation in column 4, line 62 through column 5, line 4 as follows:

> The output of the oscillator is fed to a microprocessor which measures the change in period of the oscillator as debris accumulates on the probe. The difference in the period from the initial period (measured with no debris particles) is a measure of the amount of debris particles accumulated. Simultaneously, a signal which is proportional to the resistance (temperature) of the sensor coil, is also provided to the microprocessor. The microprocessor calculates a correction factor and applies it to the observed change in period to correct for the temperature difference.

As noted in the Office Action, "Nielsen fails to teach how the temperature correction algorithm is derived." However, the Office Action goes on to state:

> Tavis teaches an inductance sensing method in which a calibration table of pressure (which is a function of inductance ***) vs temperature is used to correct for changes in inductance with temperature ***. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a look-up table in place of the algorithm of Nielsen in order to correct inductance-based measurements for temperature as taught by Tavis. It would have been further obvious to make measurements of inductance at different temperatures in order to empirically determine the data points as was known in the art.

It is noted that neither Nielsen nor Tavis provide any suggestion for making the modification espoused in the Office Action. Furthermore, neither Nielsen nor Tavis disclose, teach or suggest a method of measuring a magnetic characteristic of ferromagnetic or ferrimagnetic microparticles or microparticles comprising a ferromagnetic or ferrimagnetic material, wherein the microparticles are provided in a polymeric or pre-polymeric composition. It is noted that the lubricating oil discussed in Nielsen does not comprise a polymeric or pre-polymeric composition. Accordingly, it is submitted that claims 33 and 37-49 define patentable invention over Nielsen and Tavis, whether taken singly or in combination.

As also noted above, claims 33 and 37-49 were further rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,854,557 to Tiefnig. The '557 patent teaches measuring corrosion of metallic materials exposed to fluid media using a probe 210 consisting of an encased reference element 230 and an exposed corroding element 240. The '557 patent further teaches in column 15, lines 59-62, "compensation for variations in temperature of the measuring circuitry is accomplished by switching from the reference channel to the corroding

channel before each measurement is made." Nowhere does Tiefnig disclose, teach or suggest a method of measuring a magnetic characteristic of ferromagnetic or ferrimagnetic microparticles or microparticles comprising a ferromagnetic or ferrimagnetic material, wherein the microparticles are provided in a polymeric or pre-polymeric composition. Accordingly, it is submitted that claims 33 and 37-49 define patentable invention over the Tiefnig patent.

With this paper, new claims 50-55 have been added. Support for claims 50 and 51 can be found on page 13, lines 8 and 11-13. Support for claim 52 can be found on page 15, lines 7-16. Support for claim 53 can be found on page 16, lines 6-22 and support for claim 54 can be found on page 16, lines 24-28. Support for claim 55 can be found on page 2, lines 6-17. No new matter is involved. It is submitted that claims 50-55 define patentable invention over the prior art.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**."

In view of the above remarks, applicants submit that claims 33 and 37-55 define patentably over the prior art. Early notification of allowable subject matter is respectfully requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

Claims 33 and 37-49 have been amended as follows:

33. (Twice Amended) A method of measuring [inductance or inductive reactance] a magnetic characteristic of [a sample] ferromagnetic or ferrimagnetic microparticles, said microparticles being provided in a polymeric or pre-polymeric composition, said method comprising the steps of: (a) providing an instrument for measuring [the] inductance or [the] inductive reactance [of the sample]; (b) subjecting a portion of the instrument to different temperatures and recording data corresponding to the performance of the instrument portion at each temperature; (c) [measuring the inductance or the inductive reactance of the sample using] making at least one measurement using the instrument; [and] (d) correcting said measurement [of inductance or inductive reactance] for temperature based on the performance data; and (e) determining the magnetic characteristic of the microparticles using the corrected measurement.

37. (Amended) A method as set forth in claim 33, wherein said step of providing an instrument comprises the step of providing a solenoid coil which defines the instrument portion and a meter for directly reading coil inductance, the inductance of the coil is directly related to magnetic permeability of the microparticles, and the magnetic permeability of the microparticles comprising a magnetic characteristic of the microparticles.

38. (Amended) A method as set forth in claim 37, wherein said subjecting step comprises the steps of:

determining the inductance of the solenoid coil without [a sample] microparticles at each of the different temperatures; and

recording the inductance of the coil at each temperature.

39. (Amended) A method as set forth in claim 38, wherein said [measuring] making step

comprises the steps of:

placing the [sample] polymeric or pre-polymeric composition containing the microparticles within the coil; and

measuring the inductance of the coil containing the [sample] composition including the microparticles.

40. (Amended) A method as set forth in claim 39, wherein said correcting step comprises the steps of:

measuring the temperature of the coil containing the [sample] polymeric or pre-polymeric composition containing the microparticles; and

subtracting the inductance of the coil without [a sample] microparticles at a temperature corresponding to the measured temperature from the measured inductance of the coil containing the [sample] composition including the microparticles.

41. (Amended) A method as set forth in claim 40, wherein said coil is capable of at least a 3.7 % change in inductance upon receiving the [sample] polymeric or pre-polymeric composition containing the microparticles.

42. (Amended) A method as set forth in claim 40, wherein said coil is capable of at least a 11.1 % change in inductance upon receiving the [sample] polymeric or pre-polymeric composition containing the microparticles.

43. (Amended) A method of measuring [inductance of a sample] a magnetic characteristic of microparticles comprising ferromagnetic or ferrimagnetic material, said microparticles being provided in a polymeric or pre-polymeric composition, said method comprising the steps of: (a) providing an instrument; [for measuring the inductance of the sample; (b) subjecting the instrument to different temperatures and recording data corresponding to the performance of the instrument at each temperature; (c) measuring the inductance of the sample; and (d)] (b) making a measurement using the instrument; (c) correcting said measurement [of inductance] for the

effects of temperature [based on the performance data] variations on the performance of the instrument; and (d) determining the magnetic characteristic of the microparticles using the corrected measurement.

44. (Amended) A method as set forth in claim 43, wherein said step of providing an instrument comprises the step of providing a solenoid coil and a meter for directly reading coil inductance, the inductance of the coil is directly related to magnetic permeability of the microparticles, and the magnetic permeability of the microparticles comprising a magnetic characteristic of the microparticles.

45. (Amended) A method as set forth in claim 44, [wherein said subjecting step comprises] further comprising the steps of:

determining the inductance of the solenoid coil without [a sample] microparticles at each of [the] different temperatures; and

recording the inductance of the coil at each temperature.

46. (Amended) A method as set forth in claim 45, wherein said [measuring] making step comprises the steps of:

placing the [sample] polymeric or pre-polymeric composition containing the microparticles within the coil; and

measuring the inductance of the coil containing the [sample] composition including the microparticles.

47. (Amended) A method as set forth in claim 46, wherein said correcting step comprises the steps of:

measuring the temperature of the coil containing the [sample] polymeric or pre-polymeric composition containing the microparticles; and

subtracting the inductance of the coil without [a sample] microparticles at a temperature corresponding to the measured temperature from the measured inductance of the coil containing

the [sample] composition.

48. (Amended) A method as set forth in claim 47, wherein said coil is capable of at least a 3.7 % change in inductance upon receiving the [sample] polymeric or pre-polymeric composition containing the microparticles.

49. (Amended) A method as set forth in claim 47, wherein said coil is capable of at least a 11.1 % change in inductance upon receiving the [sample] polymeric or pre-polymeric composition containing the microparticles.